

# Innovation Technology Transfer

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## Exchange of good practice







# Contents

## Policy News | 3

- 3 European Research Area – co-ordination of cancer research
- 4 New EU copyright directive
- 5 Complementary EC-EIB funding for research and exploitation

## Dossier | 6

### Transnational exchange of innovation policy measures

- 6 The Trend Chart – a platform for interaction and mutual learning
- 8 Success factors for transfer of innovation support schemes
- 8 Innovation Scoreboard 2001 – a preview by the Director-General
- 9 Case study – how a Norwegian scheme spread around Europe
- 10 Case study – Ireland adapts a Danish approach to networking
- 11 Case study – national company visit programmes go European

## Innovation/SMEs programme | 12

- 12 What future for industrial relations in the new economy?
- 13 JRC collaborates with industry to improve car safety
- 14 Innovation projects reveal need for EU-wide authorisation procedures
- 16 Innovation project event links policy-making and business
- 17 SME Specific Measures – take-up by small firms grows
- 18 CRAFT project – new building restoration mortar

## IRE Network News | 19

- 19 Support for regional innovation under FP6
- 20 New Innovative Actions aim to narrow the regional innovation gap
- 21 RITTS case study – Eastern Macedonia and Thrace
- 22 RIS case study – Yorkshire and the Humber
- 23 Trans-Regional Innovation Project – northern Finland and Sweden
- 25 European forum on innovation strategies in metropolitan regions
- 26 Rinno web service for the exchange of regional innovation policy

## Conferences & Publications | 27-28

# Innovation switchboard

Innovation takes place within enterprises as a result of their interactions with one another, with markets, and with sources of new knowledge such as research institutions. But their collective innovation performance – the efficiency with which they convert new knowledge into competitive products and services – is fundamentally affected by the behaviour of public authorities. It is policy-makers at European, national and regional levels who shape the framework of regulations, economic incentives and support services which influence the strategic decisions made by individual businesses day by day.

In the race to improve innovation policy, and in particular to strengthen it in the parts of Europe where it remains weakest, the exchange of experience and good practice between policy-makers is critical. Without it, progress would be slower and mistakes would be repeated. The European Commission performs a vital enabling function as a 'switchboard' for innovation policy-makers, connecting them to one another and helping them to assess, transfer and adapt successful support measures.

This edition's dossier article examines the set of tools assembled in the Trend Chart on Innovation in Europe, which primarily addresses the needs of national policy-makers. And the edition introduces a new section – IRE Network News – covering the work of the Innovating Regions in Europe network, which provides a platform for similar exchanges between policy-makers at regional level.

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➤ European Research Area

# Co-ordinating cancer research

"... a large, co-operative effort is needed to ensure that every European citizen will rapidly profit from the revolution of knowledge in cancer management" – Research Commissioner Philippe Busquin.

In the European Union, cancer strikes one in three individuals before they are 75, killing some 837,000 people each year. To fight cancer effectively, we need to know which groups are most at risk and how multiple factors combine to cause the disease. We need tools for early diagnosis, and tumour-targeting therapies that spare healthy tissues.

The European Commission has supported cancer research for many years. An EU-wide approach increases the power of epidemiological studies, facilitates standardisation and the sharing of good practices, and gives researchers access to facilities, data, and expertise that no single country can offer. The first Commission-sponsored cancer projects were concerted actions, where European funds supported networking rather than research itself. Today, the Union is building a European Research Area<sup>(1)</sup> in which national research programmes will collaborate ever more closely.

## New avenues

Exploiting the European dimension has been fruitful in cancer research. In addition to knowledge on cancer mechanisms and predisposing genes, promising innovations are emerging from EU-funded projects – including markers for screening and non-invasive diagnosis, and anticancer gene therapy.

An exemplary case is that of a project<sup>(2)</sup> which aims to improve breast biopsy by combining a minimally invasive biopsy

technique (percutaneous breast biopsy) with highly sensitive detection of small, non-palpable breast lesions (by magnetic resonance imaging). The partnership pools expertise in all the clinical, surgical, and imaging aspects involved and includes Siemens, a major manufacturer of medical imaging instruments and software. An exciting offshoot is a new method that reduces the risk of cancer cell dissemination to surrounding tissues at biopsy.

## European forum

It takes many steps to translate basic research findings into clinical use and public health – *in vivo* and *in vitro* testing, animal models, clinical research, and analysis of mortality and morbidity data. Despite the good co-operation achieved in many projects, better co-ordination of national cancer research efforts is needed to accelerate the process and avoid duplication.

The new Research Framework Programme to be launched in 2002<sup>(3)</sup> will support networks of national programmes. The EU will complement national funding of specific centres of excellence, and will link this support to co-operation with other centres. An aim is to organise interaction between laboratory scientists and clinicians, academics and industry, so that each group feeds continuously into the other's activities.

On 22-23 May 2001, Research Commissioner Philippe Busquin held a meeting at which leading cancer researchers, clinicians,



**Safer, less invasive biopsy – the EU's new Research Framework Programme will facilitate the EU-wide effort needed to perfect new cancer diagnosis and treatment technologies.**

and research managers from 27 countries discussed how to improve co-ordination of European cancer research and surveillance. The delegates agreed to create a European Forum for Cancer Research under the auspices of the Commission. This should help Europe to optimise its cancer research efforts and fully exploit technology breakthroughs and the genomic revolution. ≡

(1) See 'Dawn of a New ERA', edition 6/00.

(2) Biomed 2 – Optimisation of MR-guided percutaneous breast biopsy and evaluation of its clinical value.

(3) See 'A New Framework for European Research', edition 3/01.

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## ► Copyright Directive

# Harmony for EU content market



European copyright harmonisation – a black and white issue?

The EU's new copyright directive finally came into force in June. It aims to inspire confidence in the market for creative content by pouring the oil of legal certainty on the turbulent waters of the information society.

With internal market harmonisation very much in mind, the copyright directive<sup>(1)</sup> brings Member States' copyright laws into closer agreement with one another. It also brings them more closely into line with the laws of the many countries that have ratified the World Intellectual Property Organisation's 'Internet Treaties', to which the Community and its Member States are also signatories.

The directive defines the rights of copyright holders in general terms but there is no mistaking that this is legislation intended for a digital age. A case in point is the explicit exemption it makes for temporary incidental copies made to improve the performance of ordinary information-society tools – the copies of web pages which web browsers routinely store in caches, for example.

## Information society protection

There is specific protection against the circumvention of techniques like encryption which copyright holders employ to prevent unauthorised use of their works. Rights-management information also comes in for specific protection. Electronic rights-management information is increasingly attached to electronic copies of copyright works to keep track of their uses and thus of payments owed to their authors. The directive outlaws unauthorised removal or alteration of such information.

Users have not been neglected. Member States are required to take action against right-holders who employ technological measures that impede *legal* uses of copyright content – such as non-commercial, private use (in countries where this is permitted). In fact, non-commercial, private use is just one item in an exhaustive list of 20 exceptions which Member States may optionally provide for when they implement the directive.

## Future confident

"Authors and producers are more assured of their ability to protect work that is made available electronically – over the internet, for instance," says Alex Weir of the Commission's IPR-Helpdesk. The helpdesk provides free advice on intellectual property rights (IPR)<sup>(2)</sup> and may be present at the Patinnova and Epidos conferences in October<sup>(3)</sup>, which will examine the closely related IPR issue of patents in the information society. "Consumers are also protected," Weir adds. "So there should be a new confidence in e-commerce among content buyers and sellers, not forgetting the innovators who provide the underlying digital technologies. The directive gives a real boost to the Commission's eEurope initiative."

Challenges remain. Member States must bring implementing legislation into force in December 2002. Not until this date will it be clear how successful this attempt at harmonisation has been. With a list of 20

exceptions they can include or exclude at will, there is potential for legislatures to perpetuate considerable 'distortions' within the internal market for creative content.

"But the directive does build in safeguards," Weir points out. "The Commission has to review the directive in December 2004, and every three years after that. And if necessary it can propose amendments." ■

(1) Directive 2001/29/EC of the European Parliament and of the Council on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society, downloadable from [http://europa.eu.int/eur-lex/en/tif/dat/2001/en\\_301L0029.html](http://europa.eu.int/eur-lex/en/tif/dat/2001/en_301L0029.html)

(2) See 'Light in the Darkness', edition 2/01.

(3) The conference website is at <http://www.patinnova.org/>

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Research Commissioner Philippe Busquin and EIB President Philippe Maystadt exchange the joint memorandum on co-operation in the area of research and innovation.

## ➤ Innovation Finance

# Complementary funding

A joint memorandum signed in June by the European Commission and the European Investment Bank (EIB) opens the way for active co-operation between the two bodies – and the complementary funding of research and innovation.

Although Europe excels in research, investment in the successful exploitation of its results lags behind the US and Japan. In March 2000, the Lisbon European Council called for better co-ordination of measures to support research, and the 2001 Stockholm Council urged the EIB to step up assistance for research and innovation.

The EIB now offers such support through its Innovation 2000 Initiative (i2i). EIB President Philippe Maystadt and Research Commissioner Philippe Busquin felt it made good sense for the two institutions to work more closely together, sharing information, defining common goals and co-ordinating actions. As Busquin commented: "We have always shared a number of common objectives. Now we will also combine our funding to optimise the effect of the money invested."

The June agreement establishes a framework for co-ordination, designed to stimulate research and innovation. This will make it easier for a single project to be funded by both i2i and the European Union Research Framework Programme, either simultaneously or sequentially. The Commission and the EIB will exchange information on policy development and on specific projects, and a high-level steering group will regularly review strategic priorities for research and innovation financing. The Commission and the EIB have also pledged to make information about funding possibilities more accessible to potential beneficiaries.

## Specific targets

Access to combined finance for research and exploitation should improve a project's commercial prospects. The proposals for the next Framework Programme (2002-2006)(1) specifically provide for the funding of larger 'integrated' projects, and of projects initiated by Member States. A mechanism is being developed to simplify and accelerate the EIB's assessment of projects that have already been evaluated under the Framework Programme.

Where research infrastructures require major investment, for example in large computer facilities or telecommunications networks, Framework Programme funding may from 2002 be complemented with loans provided by the EIB – either alone or in partnership with the private sector and possibly the Community Structural Funds.

An existing example of how this could work in practice is offered by the European Molecular Biology Laboratory. EMBL is a group of five research facilities working with the support of 16 European countries in molecular biology and bioinformatics. Its current funding includes about two-thirds of a grant of €19.4 million awarded to a research consortium of which it is a member under the Commission's programme on genomes for human health. This is complemented by an EIB loan of €29 million for incubator facilities at EMBL's International Technology Transfer Centre.

## Innovative SMEs

Last, the EIB's European Investment Fund (EIF) could, by the end of 2003, pledge up to €3 billion in support for innovative small and medium-sized enterprises (SMEs), through venture capital funds. The EIF also supports science parks and incubators. Increased co-operation with the Commission will include consultation on strategy and financing for these ventures. ≡

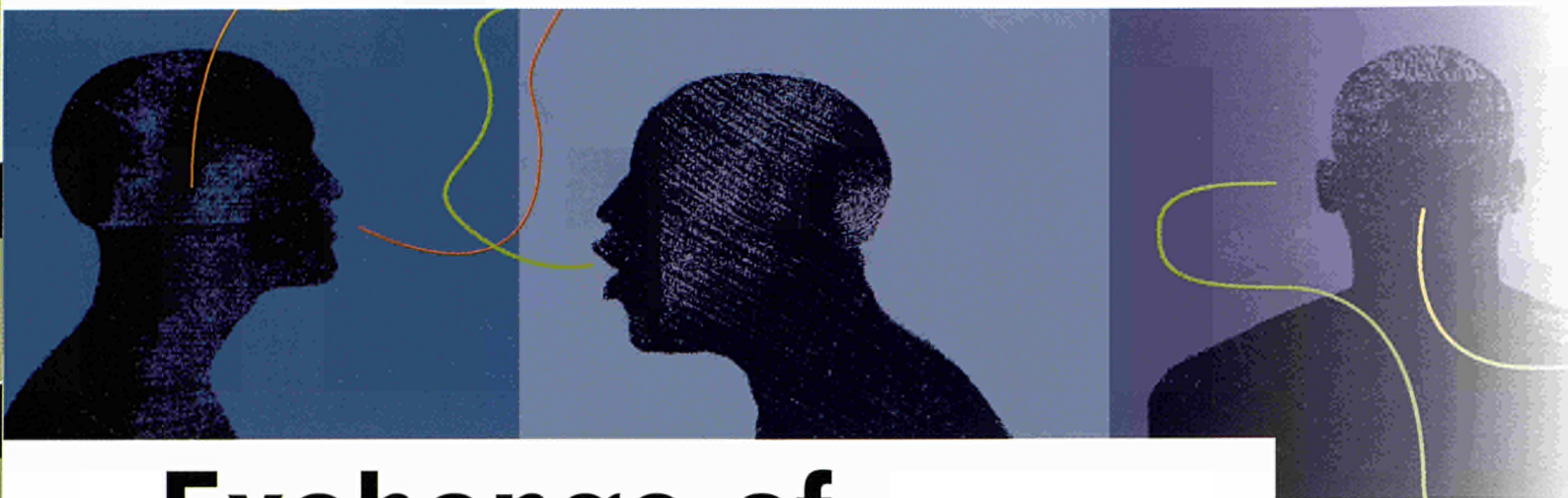
(1) See 'A New Framework for European Research', edition 3/01.

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# Exchange of good practice

The effective transfer of successful innovation support measures between Member States will speed up the improvement of Europe's innovation performance. Policy-makers need to draw on one another's personal experience and support, and must actively engage in the adaptation of schemes to conditions in their own countries. The Trend Chart on Innovation in Europe gives them the structures and tools to perform this challenging but vital task.

Almost every cultural, technological and economic advance comes about through the adaptation or extension of existing ideas. For at least a decade the European Commission's Innovation programme and its forerunners have promoted the transnational transfer of new technologies. Increasingly, the programme has focused on the exchange of good practice in the *process* of enterprise-level innovation. Now it is also providing – in particular through the Trend Chart on Innovation in Europe – structured support for the exchange between Member States of policy measures to promote such innovation.

"Humans are imitative creatures," says Dr Christian Brebeck. As a member of the Innovation programme's management committee, representing Germany's Federal Ministry of Economic Affairs, Brebeck himself recognised an opportunity for imitation in the early 1990s. "A colleague from the United Kingdom described the company visits programme 'Inside UK Enterprise'," he recalls. "I thought: Why shouldn't we have a similar programme in Germany? And why couldn't we link the two schemes, so that British and German entrepreneurs might exchange ideas on new technologies and innovation management?"

Brebeck returned to Bonn and paved the way for the German company visits programme, TOP. A few years later, similar schemes have been launched in Spain, Austria and the Netherlands, linked transnationally in exactly the way that he foresaw (see 'Spreading like wildfire').

## 1. Towards continuity of interaction

The Trend Chart acts as a clearing house for information about national innovation support measures, and a forum for direct contact between policy-makers.

"European policy exchange really began in the field of employment," says Peter Löwe of the Commission's Directorate-General for Enterprise, who manages the Trend Chart action. European Union and OECD conferences had long served as informal mechanisms for cross-border policy learning. But it was the Luxembourg process, started in 1997, that provided the model for the more formal mechanisms proposed by the Member States at the Lisbon Council of March 2000. These call for the benchmarking of national performance in the fields of employment, innovation, enterprise and research – for the regular collection of data

on specific indicators, the development of guidelines for national policies, and mutual learning or 'open co-ordination' effected through peer reviews.

"But innovation policy is not like qualification for the euro," Löwe stresses. "The Maastricht process defined quantitative targets with which each country had to comply. In the field of innovation policy, certain differences between Member States are so large that common targets would be neither realistic nor useful." Instead, what is needed is a platform for interaction and learning which will strengthen innovation policy-making

and innovation performance throughout the EU as efficiently and rapidly as possible.

## Framework for co-operation

Piloted in 1999, and launched fully in 2000, the Trend Chart provides this platform. It consists of three main components:

- **The European Innovation Scoreboard** (see 'Start Here') – The scoreboard summarises data on 17 quantitative indicators of innovation performance for each Member State, based on available statistics. Highlighting both strengths and weaknesses, it is designed to stimulate debate between members of the business, research and policy-making communities, and to provide a starting point for policy improvement.

- **A database of innovation policy measures** – Freely available on the internet (see Contact p.11), the database currently identifies around 500 innovation support schemes, by theme and by country. It not only describes each scheme's target group, objectives and mechanisms, but also gives an account of its successes and problems, and in most cases a named contact person. Information is collected continuously by correspondents who also produce detailed annual **country reports** on innovation policy developments in each Member State.

- **A series of thematic workshops** – Drawing on the country reports, the workshops proactively address specific topics of policy design or practical implementation, bringing together groups of policy-makers and practitioners from around Europe for peer review of policy measures in areas of shared interest.

## Answering a need

Demand for the workshops from individual policy-makers mirrors the request for a mechanism to facilitate mutual learning made by the Member States at Lisbon. "Informal, personal contacts are tremendously important," says Brebeck. "But the

EU is so large that structures to facilitate these exchanges are essential."

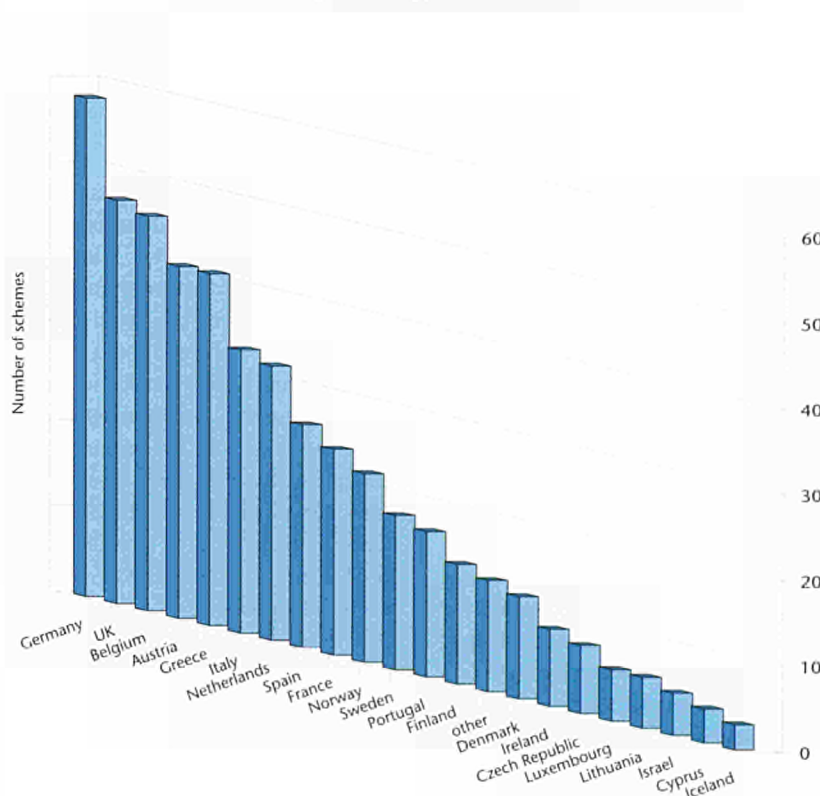
"Dr Brebeck and other members of the Innovation programme's management committee became interested in the exchange of good practice towards the end of the 1990s," recalls Peter Löwe. "They set up a working group which evolved into the Group of Senior Officials (GSO) that now acts as the link between the Trend Chart and the policy-maker community in each Member State."

The GSO plays a key part in the preparation of each workshop, identifying emerging pol-

icy trends, relevant national schemes and active or interested players. "We then develop a typology of schemes related to the chosen topic, and ask each Member State for an account of their successes and problems, or the nature of their interest," Löwe explains. "This allows us to perform a preliminary matching of those with experience and those who wish to learn. The workshops are only one step in a longer process of collaboration, but we hope that they will catalyse the formation of long-term policy-making partnerships."

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**Schemes included in the Trend Chart database by country, June 2001**





*Policy measures*

**Over time (or) cross countries policy measures available in the Trend Chart data base**

**Legend** over countries (or) over time

Policy Measure	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019	2020-2029
1. Subsidies to Farming	1	1	1	1	1	1
2. Governmental Support to Agriculture	2	2	2	2	2	2
3. Agricultural Policy - Independent	3	3	3	3	3	3
4. Agricultural Policy - Interdependent	4	4	4	4	4	4
5. Public Intervention	5	5	5	5	5	5
6. Governmental Planning and Control	6	6	6	6	6	6
7. Governmental Control of Imports and Exports	7	7	7	7	7	7
8. Governmental Control of Prices	8	8	8	8	8	8
9. Governmental Control of Production	9	9	9	9	9	9
10. Governmental Control of Distribution	10	10	10	10	10	10
11. Governmental Control of Consumption	11	11	11	11	11	11
12. Governmental Control of Investment	12	12	12	12	12	12
13. Governmental Control of Research and Development	13	13	13	13	13	13
14. Governmental Control of Education	14	14	14	14	14	14
15. Governmental Control of Health	15	15	15	15	15	15
16. Governmental Control of Environment	16	16	16	16	16	16
17. Governmental Control of Culture	17	17	17	17	17	17
18. Governmental Control of Religion	18	18	18	18	18	18
19. Governmental Control of Social Services	19	19	19	19	19	19
20. Governmental Control of Other Services	20	20	20	20	20	20

## The Director-General for Enterprise

**Fabio Colasanti explains why ranking the innovation performance of the European Union's Member States is so important.**

The 2001 edition of the Scoreboard, which we expect to release this month<sup>(1)</sup>, will for the first time show trends in national performance for each indicator over the last few years. Overall, there has been improvement across the EU. But consider-

FC: It is for Member States themselves to decide how they should respond to the Scoreboard, and to the much more detailed assessments given in the country reports produced by the Trend Chart on Innovation in Europe. They control the regulatory and fiscal regimes, and fund the support measures, which together determine the climate for innovation by their enterprises. But one of the most efficient ways for them to strengthen national innovation policy is to identify existing good practice which could remedy an identified weakness in their own country, and to emulate it. The Commission is proactively helping to bring together Member States with a shared interest in particular topics, to facilitate the transfer

FC: I am confident that it will. Already, one EU Member State or another leads both the United States and Japan on almost every innovation indicator. The goal now is to raise EU average scores which currently lag behind these competitors. Effort and investment must come mainly from the Member States, but the Commission will continue to stimulate and support their development of national innovation policies.

*(1) The full text of the Innovation Scoreboard will be published as a special edition of Innovation & Technology Transfer in October.*

The Trend Chart is helping to create a European community of innovation policy-makers who can contact one another directly for advice and support.

- **dissemination** – the country which first developed it actively promotes a successful scheme

- **partnership** – two or more countries identify complementary strengths and undertake reciprocal transfers
- **spontaneous** – individual policy-makers seek solutions through personal networks (see ‘Spreading like wildfire’)
- **networking** – good practice is diffused through existing industrial or research networks
- **top-down** – a Commission initiative





## Case Study

# Ever-widening circles

In a small number of cases, a widely applicable innovation support scheme is transferred by a Commission initiative.



Launched in Norway in 1989, the Business Development Using New Technology (BUNT) programme developed a measurable process consultancy package suitable for small and medium-sized enterprises (SMEs) in particular. It trained local consultants to use the package, and carried out a series of pilot consultancies as the basis for formal evaluation and refinement of the tools.

"The European Commission was very interested, and wanted to see if BUNT could be translated and adapted to the needs of other countries," says Philip Sowden, who co-ordinated the transfer project. Although it was a top-down initiative, Euro-BUNT involved as many as ten Member States, whose practitioners soon took hold of the material and shared their experiences both formally and informally. "We each examined ways of applying the approach in our own countries, in some cases by integrating it into existing national initiatives," Sowden recalls. "The results were tested across the EU in the MINT programme, and later compiled in a

'European Handbook of Management Consultancy'(1)."

A follow-up project, Prism, in the United Kingdom, funded by the Innovation programme(2), addressed a perceived weakness in the MINT approach. "We felt the consultancies might achieve more if they went beyond technology audit to action planning and implementation," Sowden explains. Prism trained 25 British consultants, who carried out 50 pilot assignments with small manufacturers using a range of methods including Profile Analysis, a quick and simple diagnostic tool for assessing a company's innovative capacity.

Prism generated considerable interest around the EU. "In 1998, we ran a course on Profile Analysis for a group of consultants from Italy, Spain and Cyprus," says the project's co-ordinator, Brendan Vickers of the consulting group, Pera. "We also trained business advisers in the Strathclyde region of Scotland, and applied the Prism approach in a number of small businesses over a two-year period."

Profile Analysis attracted interest from Greece, Holland and Belgium too, while elements of Prism's benchmarking and customer-focused manufacturing tools have also been taken up outside the UK. Thanks to hands-on transmission of know-how, careful adaptation to local needs, and effective dissemination of results, the original transfer of Norway's BUNT scheme has produced very far-reaching impacts.

(1) ISBN 1-86076-010-4; Oak Tree Press, Dublin (Ireland).

(2) See 'Market-Oriented Innovation', edition 5/97.

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spreads a scheme which successfully addresses a common European problem (see 'Ever-widening circles')

"Member States must decide for themselves what is transferable and what is not," Löwe explains. "We do not want to encourage a 'lemming' effect, in which they uncritically adopt the same schemes. The Commission's role is to create the opportunities and tools for country-to-country exchange – and to draw lessons about the process of policy transfer itself."

## Style victims?

One lesson that has already been learned is that the conditions for innovation policy vary widely. Good ideas must be adapted to the industrial structure, business culture and institutional framework in which they are to be applied. "The GSO has given us a strong message that naïve application of the latest policy fad must be avoided, and past experience confirms this," Löwe says.

The Trend Chart tries to decontextualise policy measures, identifying transferable

good practice which can be recontextualised in a new setting. "TOP is not a one-to-one copy of the UK programme," Christian Brebeck points out. "We took its spirit and basic mechanism, but implemented it in a different way, using an independent contractor with a wide range of contacts in the business world to deliver the scheme."

Across the EU, differences will persist, Brebeck emphasises. "We must learn to live with them, and ensure that they do not form a barrier to the exchange of policy

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good practice. The growth of the community of individuals and institutions operating at European level, facilitated and coordinated by the Commission, is rapidly increasing the EU's capacity to manage the process of policy transfer and adaptation."

### On first name terms

Already, there is evidence that the Trend Chart is indeed accelerating innovation policy transfer, helping policy-makers to avoid duplication of effort and the repetition of mistakes by adapting approaches and tools developed by colleagues in other Member States. Whatever the mode of transfer, personal contact plays a crucial role.

"We had an extended conversation with John Hørsted from the Danish Patent and Trademark Office," reports Dr Vivi Gaganatsou of the Hellenic Patent Office (OBI), who in April attended the Trend Chart workshop 'New developments in IPR policies'<sup>(1)</sup> with her colleague Dr Stratos Koutivas. "Soon after, he came to Athens for a further exchange of views on IPR policies and litigation issues, and we hope to visit him in Denmark later in the year."

Raising awareness of patents as a source of information and protection among industrial and academic researchers is a high priority for the Greek government. The Trend Chart workshop has advanced OBI's efforts

to meet this demand with its very limited resources, Gaganatsou says. "Only last week another participant, Dr Ingrid Weidinger of the Austrian Patent Office, gave us the results of a survey of patent awareness measures taken by other European patent offices. The direct contacts made at a workshop greatly simplify this kind of dialogue."

"There is no abstract or theoretical way to transfer policy effectively," Löwe confirms. "Policy-makers themselves have to be actively engaged for the process to work." ■

(1) See 'Innovation Policy Club', edition 4/01.

## Case Study

### Where did you get that scheme?

**The Trend Chart makes it easier for policy-makers to find relevant schemes in other Member States. But such transfers have taken place before.**

A new, holistic approach to the country's innovation system led policy-makers in Ireland in the mid-1990s to identify lack of inter-firm co-operation as a key constraint on innovative performance. After assessing Denmark's Networks programme, they built a similar pilot into Ireland's first-ever White Paper on Innovation.

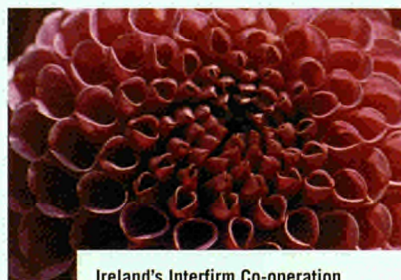
"The Danish initiative was designed to help small firms to develop their own core competencies, extend their knowledge networks and achieve economies of scale," recalls Dermot O'Doherty, Senior Policy Advisor at Ireland's agency for enterprise, trade, technology and innovation, Forfás. "It grouped firms around network hubs established to manage the jointly owned resources of the network."

The results were impressive. Between 1989 and 1992, the programme created nearly 300 networks involving around 5,000 companies, fundamentally altering attitudes and making networking a real strategic option in the search for competitiveness.

### Adapt and evolve

Running for just nine months in 1996-97 – and with a budget of only €300,000 – the

smaller-scale Irish pilot programme, the Interfirm Co-operation Networks scheme, also adapted the Danish approach to the local situation. It did not set up formal 'network companies', but integrated the experience of existing Irish networks and brokers and encouraged academic partners to get involved. Seventeen networks were



**Ireland's Interfirm Co-operation Networks scheme groups firms around trained network facilitators.**

established in a range of industrial sectors, and the pilot was very positively evaluated. Ireland's National Development Plan 2000-2006 incorporates many of the principles which it established, particularly in priority areas such as ICT, biotechnology, optoelectronics and advanced materials.

"We showed that a formal networking

methodology using trained facilitators was effective even though there was no previous culture of inter-firm co-operation," O'Doherty explains. "The best results were produced by partners that came from different sectors and had different technological backgrounds, and when they started to co-operate by working together informally."

In the policy arena, as in business, transfer takes time. What you end up with is rarely exactly what you had in mind when you started the process. But that is no reason to reinvent the wheel, when similar problems have already been successfully addressed elsewhere.

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## Case Study

# Spreading like wildfire

A British business-to-business exchange scheme, taken up in Germany in 1992, has since been transferred to three other Member States.



TOP participants gain practical, on-the-spot insight into innovation good practice.

For some innovation support measures, the time is simply right. The United Kingdom's 'Inside UK Enterprise' programme, launched in the late 1980s, arranges one-day visits by groups of companies to host firms exhibiting best practice, for exchanges of experience on specific technological or innovation management topics.

The scheme is based on direct contact between firms in a practical environment where best practice can be studied in action. Around 5,000 managers take part each year, and 80% implement change in their own businesses as a direct result.

"Global competition and technological progress wipe out SMEs which cannot adapt continuously and rapidly," says Markus Garn of F.A.Z.-Institut. "But why reinvent the wheel? Why risk getting an important strategic decision wrong? It is often safer and faster to build on the experience of another successful company."

F.A.Z.-Institut has run Germany's TOP programme for the Federal Ministry of

Economic Affairs since 1992. This year it is staging 240 events with more than 2,500 participants, on topics such as 'the learning organisation' and 'the process-oriented factory'. "To begin with, it was hard to persuade established companies to share their innovative expertise with groups of unknown entrepreneurs," Garn confesses. "But today over 100 host companies from a wide variety of sectors are as enthusiastic about the events as their visitors."

For the hosts, TOP offers opportunities not only to improve their image but to meet potential suppliers, collaborators and customers, and to formulate ideas for new strategies and new technology applications. Meanwhile, 75% of the visitors say that the experience has helped to shape their strategic plans.

Both policy-makers and practitioners in other countries soon noted the success of the Inside UK Enterprise and TOP programmes. With active support from the British and German project teams, similar

schemes have since been established in Spain, Austria and the Netherlands. And, in 1997, EUNET-TOP was launched to link the national programmes, opening them to executives from abroad. "Internationalising the transfer of knowledge within Europe allows us to exploit a wider diversity of experience. We hope that other Member States will also take up the scheme," says Garn.

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## ● Innovation Policy Study

# Industrial relations in the new economy

**Will the new economy see the end of institutionalised industrial relations? Early findings from research commissioned by the Directorate-General for Enterprise suggest that specific forms of industrial relations can still make a positive contribution to business innovation.**

Led by the Higher Institute of Labour Studies (HIVA) at the Catholic University of Leuven, the Innovation Policy Study aims to identify, map and disseminate best practice in the field of innovation-friendly industrial relations in Europe. A literature review is complete, and data has been collected in field interviews from 20 cases in different EU Member States. The final report, aimed at European policy-makers, trade unionists and business managers, is expected to be available next January.



## The Innovation/ SMEs Programme In Brief

Part of the EU's Fifth Research Framework Programme, the 'Innovation and participation of SMEs' programme promotes innovation and encourages the participation of small and medium-sized enterprises (SMEs) in the framework programme. The Programme Director is Mr G.C. Grata (Innovation Directorate, Enterprise DG).

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Even at this early stage it seems clear that the new economy will not bring industrial relations to an end. "Companies need to innovate to survive," explains HIVA researcher Kirsten Van Den Berghe. "They must draw on the innovative potential of each of their employees. Industrial relations, which regulate the interplay between employees and employers, have a valuable role to play."

## A model

But is innovation about the production and use of technologies, or about the adoption of new organisational forms and methods? In early discussions with the study's steering committee, composed of managers, consultants, trade unionists and government representatives, the research team chose to embrace both these aspects. It adopted a broad model of innovation in which knowledge, whether embodied in humans or in technologies, is central.

In this model, industrial relations are mediated by direct and indirect employee participation. In the former, employees are involved in managerial decision-making. In the latter, they participate through intermediaries such as trade union representatives or works councils. Both kinds of participation influence the ways in which knowledge – the human capital on which innovation depends – is created, adopted and disseminated. The influence is exercised not only through the formal contract which regulates the employee-employer relationship, but also through the cultural links of trust and empowerment which form an additional psychological contract.

## Model meets reality

The next research step was to look for European cases of workplace industrial relations,

trade union programmes and social partnership initiatives which showed 'excellence' in stimulating knowledge creation or adaptation.

"This was not easy," says Guy Van Gyes, the study's co-ordinator. "It is still rare for policy research to make an explicit connection between companies' industrial relations and their innovation policies. But if you dig deeper, all over Europe and especially in northern and central Europe you discover examples of workplace industrial relations playing a stimulating role in companies' knowledge management. On a supra-company level, you also find industrial relations involved in several regional innovation systems. A social partnership between companies, employees, their representational organisations and the academic world can be a driving force for sustainable and socially acceptable economic innovation."

Innonet is a Swedish example of such a regional initiative of social partnership<sup>(1)</sup>. Funded by the government's Foundation for Knowledge and Competence Development, the Council for Work Life Research and the National Board for Industrial and Technical Development, it is a 'development coalition'. As a supra-organisational structure made up of policy-makers, academics, managers and employees, its objective is to enhance the organisation's ability to learn and innovate.

## Collaborative networking

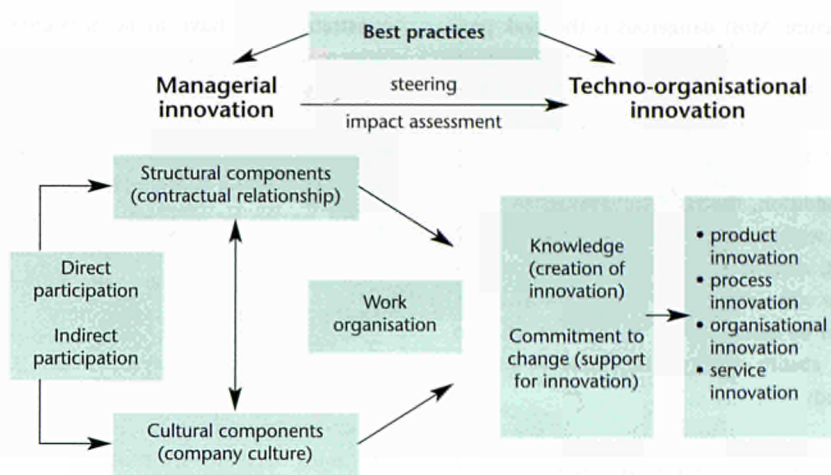
It began in 1993, when Halmstad University's Centre for Working Life Research and Development started to build a network of local small and medium-sized enterprises (SMEs) interested in exploring collaborative relationships. Academics and managers met and common concerns were identified – among them the quality of the working



environment and the reorganisation of a new factory department. The network then adopted these concerns as problems and worked out solutions, integrating alternatives by presenting them as strengths, weaknesses opportunities and threats (SWOT) analyses.

With the launch of the PRYO project in 1997, the approach was broadened to involve employees and to counter the possibility that the network might be considered an exclusive club for managers. Employees were exchanged so that different firms could learn from one another. The project gave rise to ideas on organisational efficiency, building the competence of the employees exchanged and the capacity of their organisations to learn. The participating firms report that their problem-solving ability has improved. ■

(1) See 'Knowledge and commitment in action: The dynamics of a network of small enterprises', Max Lundberg and Joakim Tell, available at <http://www.hh.se/teii/Teii/hllt2.pdf>



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#### Competitive Support Activities

## Liquid shock absorber

Research into a new type of crash energy absorber, based on high-speed liquid jet formation, has shown distinct advantages over current automotive safety devices. The results could represent an important advance in improving the safety of European vehicles.

The European Commission's Joint Research Centre (JRC) at Ispra, Italy, began testing a liquid jet crash energy absorber (LJCEA) during 1997. Its Spanish research partner, Labein, designed and constructed prototypes, while the Italian company, Innova, disseminated the results of the project and promoted the concept to the automotive manufacturing industry. The project was completed towards the end of 1999.

The aim was to overcome the limitations of the energy absorbers that are most commonly used on commercial vehicles at

present. These convert the kinetic energy of the car in a crash into plastic deformation of the bodywork and chassis. However, current devices only work sufficiently well in frontal collisions, and at relatively low speeds.

### Smoother deceleration

Tests were conducted by Labein on ten LJCEA prototypes – each fitted to a Renault Clio car – and others at the crash testing facility at JRC Ispra, one of the most advanced in the world. The results were very promising. "The concept was appreciated by



By dissipating energy more smoothly, the liquid jet crash energy absorber could improve vehicle safety.

the automotive industry as an innovative approach offering unique advantages," says Alfredo Picano of Innova. "The main benefit is the smooth dissipation of energy during all phases of a crash. Current absorption systems do not shield passengers adequately from energy peaks produced by progressive localised buckling of the automotive

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structure. Most dangerous is the peak produced at the start of deceleration. The other big advantage over conventional absorbers is enhanced performance in oblique impacts of up to a 40° angle."

In addition, the LJCEA continues to function well as collision speed increases. In contrast, current devices are only designed to cope with impacts up to 65 kph, as stipulated by international regulations, and do not absorb energy adequately at higher speeds.

### Commitment needed

Further development is needed to demonstrate the market potential for the LJCEA. The most promising application appears to be for lightweight vehicles, with the device built into a more rigid structure. However, questions regarding cost and manufacturing

constraints will have to be answered in order to attract investment from a demanding automotive industry. The chassis of the car may need to be redesigned to incorporate the LJCEA, rather than having it fitted as an accessory. In particular, the overall weight has to be reduced. The powerful mathematical models developed by Labein in the initial project will facilitate the design of tailored applications in the future.

"The preliminary results with the LJCEA have generated enough interest among automotive manufacturers to involve them in a joint development project," explains Picano. "The principle has been validated and the advantages confirmed. It is now up to the manufacturers to have the confidence to participate in the next step. In any case, the work done so far is already an important contribution to transport safety for European citizens."

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### Authorisation Procedures

# Cognac and Rioja – worlds apart?

The lack of a common EU-wide procedure to authorise new environmental technologies is slowing the spread of safe, cost-effective methods of reducing pollution.

EU-wide authorisation of medical drugs offers European enterprises and European citizens substantial benefits. Established in 1995 as the result of a European Union initiative, the licensing procedure is administered by the European Medicines Evaluation Agency in London. It saves pharmaceutical companies the costs of securing multiple national licences, and minimises delays in bringing new medicines to market.

No such common authorisation procedure exists in other fields. The lack of harmonised legislation, and the requirement to seek approval for a new technology in

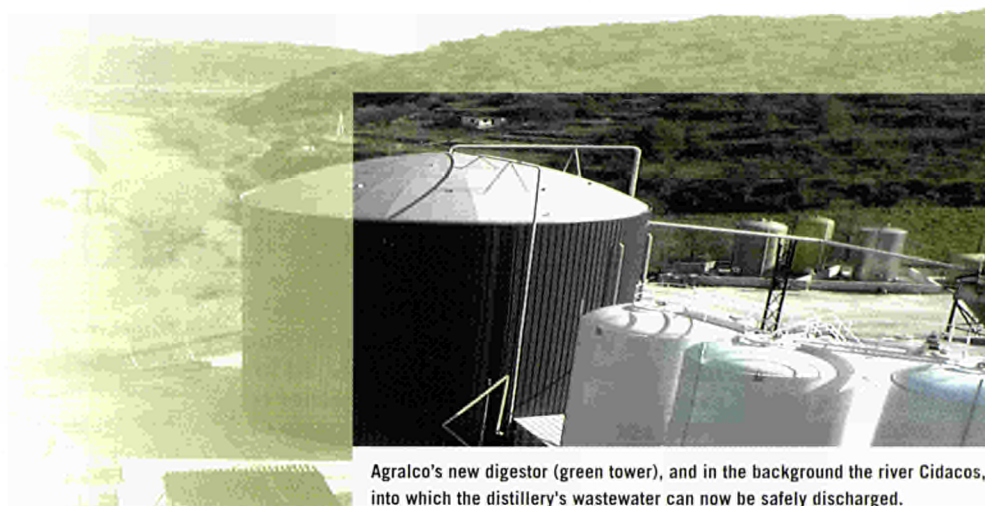
each country in which it is to be applied, creates a major barrier to innovation and competitiveness in important sectors such as biotechnology and environmental technologies.

In the latter field, the fact that a pollution-saving method has for many years been safely and successfully employed in one country provides no guarantee that others will authorise its use. Private and public sector organisations must often wait several years before they can benefit, and extra costs and delays jeopardise the viability of some technology transfer projects.

### Sewage into gold

Sewage sludges from wastewater treatment plants are a major headache for municipal authorities throughout Europe. The conventional method of disposal is to dry the sludge and bury it in landfill sites, but this is expensive and energy intensive, and creates a long-term environmental hazard. For small rural communities where complex anaerobic treatment facilities are uneconomic and properly treated sludge is potentially valuable as an agricultural fertiliser, composting is widely recognised as the best available technology.





Agralco's new digester (green tower), and in the background the river Cidacos, into which the distillery's wastewater can now be safely discharged.

In Greece, the plant materials needed for successful composting are scarce. An alternative technology, in which sewage sludge is treated with quicklime (CaO), was developed in the 1980s by the Danish company Carl Bro Environment. The method yields a hygienic, odourless, nutrient-rich product which has been successfully applied as a fertiliser in Denmark for nearly ten years.

"The SMAG project<sup>(1)</sup> conducted extensive laboratory and field trials in Lamia, and adapted the technique to Mediterranean climatic conditions and soil types with complete success," says Yiannis Tselentis of Greek firm NAMA Consulting Engineers and Planners. "The method attracted considerable interest from Greek municipal authorities as a cost-effective solution to their disposal problems."

But it took over two years to obtain a permit for the construction of a second plant in Rethymnon – and Tselentis says that, before other authorities can use the technology, they will have to go through a similar procedure. It is not the complexity of the technology itself which causes the delay. "Convincing the authorities of the merits of the lime stabilisation method was easy," he explains. "The problem was an administrative one, caused by a backlog of applications for environmental permits."

## Aqua vitae

For the Spanish company Agralco, which operates a large distillery in the Rioja region, wastewater treatment was also a major problem. The chemical oxygen demand (COD) of the wastewater was too high for discharge to the public sewer system, and the company was using it to irrigate agricultural land.

Keen to reduce costs and environmental impacts, Agralco identified a French treatment technology used in Cognac for over 15 years. Combining anaerobic, aerobic and filtration steps, it has low capital costs, generates energy for reuse elsewhere in the production process, and decreases the organic load in distillery wastewater by 99%, allowing direct discharge to public sewers.

"The technology transfer carried out in the Tiared project<sup>(2)</sup> was straightforward," reports Igor Idareta of Asesoría Industrial Zabala, which provided Agralco with project management support. "The new treatment plant has worked well from the day it was installed." However, Agralco is still operating the plant under a temporary permit, while it awaits the outcome of an authorisation procedure which has already taken over 12 months.

"Licensing has been delayed by demands from third parties for a tightening of the conditions under which Agralco may irrigate the soil," Idareta explains. "This is irrelevant to the treatment technology itself, but has involved the company in considerable time, effort and expense."

## Ten-year goal

A study<sup>(3)</sup> of recent Innovation projects dealing with life-science technologies identifies a number of good practice lessons and common barriers, and concludes that an EU-wide authorisation procedure would give a real boost to the competitiveness of the environmental technology sector. "National legislation would need to be harmonised, so a political initiative is needed," says Constant Gitzinger of the European Commission's Directorate-General for Enterprise. "It could take a decade to establish a

uniform procedure. But the potential competitive and environmental rewards are too large to ignore." ■

(1) IN103131 – Hygienic sludge management for agricultural utilisation.

(2) IN101281 – Integral treatment for waste-water in distilleries.

(3) INNO-150-I – Innovation barriers in industrial operations in the sector of 'life sciences'.

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## ► Innovation Projects

# Innovation systems, integrated Europe



The road is the way.

The critical importance in the innovation process of issues traditionally regarded as 'soft' is now well recognised in Europe. A recent event brought stakeholders together to discuss the contextual, social and institutional aspects of a holistic approach to technology transfer.

'Promoting innovation systems in an integrated Europe', which took place in Gothenburg on 10-11 June, targeted the widest possible cross-section of actors in the innovation process.

"We had just the right mix of entrepreneurs, academics, government officers, trade unions and employers," explains Dr Lars Karlsson of Lund University, scientific advisor to the event. "As a result, the discussions were excellent, covering every dimension of technology transfer, and not only the technical issues." One of the key ideas to emerge was that of sustainable innovation. "This is not a purely environmental concept, but also encompasses the cultural, social and economic significance of sustainability," as Karlsson puts it.

## Social capital

Taking place in Sweden during the Swedish Presidency, the conference was intended to make a bold statement about the importance of 'social capital', and provided an excellent meeting place for all those with an interest in these issues. In particular, thematic platform activities opened new channels for communication and the exchange of experience between the partners of different Innovation projects, making valuable connections between the dynamics of policy-making and business (see diagram).

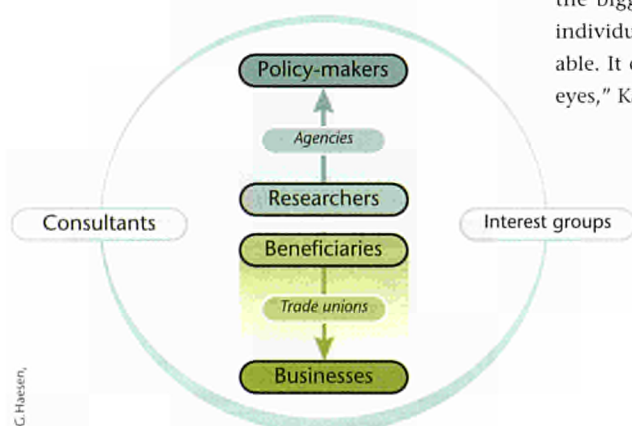
According to Karlsson, they were building "the basis for integrated mutual support". Cross-fertilisation between sectoral and national cultures was an implicit theme, and the scale of the meeting deepened understanding of the common contextual problems which beset projects of widely differing technical natures. "The ability to see the bigger picture – beyond the limits of individual projects – proved extremely valuable. It certainly opened some participants' eyes," Karlsson emphasises.

## Continuous improvement

In a structured discussion of new approaches to technology transfer, four thematic workshops covered turning obstacles into opportunities, the integration of virtual companies, trends within innovation systems, and empowerment and mobilisation of the workforce. These subjects themselves clearly indicate how the improvement of innovation systems is being pursued, but as Karlsson himself is the first to point out, the process is ongoing. He identifies trust as the key to wider European co-operation, and believes that one of the main lessons to be drawn from the event is the essential nature of an open approach to continuous learning within and across innovation systems.

The whole question of non-technical barriers to innovation has been receiving steadily increasing attention within the Innovation and SMEs programme<sup>(1)</sup>. As Karlsson explains, the true value of the conference will only really begin to become apparent now that it is over. There has been plenty of positive feedback regarding the event itself. But the key test will be how the participants translate its lessons into action, and how they build on the open collaboration whose foundations were laid in Gothenburg.

As Francisco Fernandez of the European Commission points out, "Innovation projects are test-beds for the sharing of knowledge. They are designed to demonstrate that, in a global market, far from undermining commercial competitiveness, such collaboration produces significant benefits to all partners." Only by engaging the broadest constituency of actors within innovation systems can significant progress be made towards developing an integrated approach to European technology transfer.



Sustainable economic development demands innovation which fits the social and environmental context. Both policy-makers and potential suppliers of technological solutions must be well informed about beneficiaries' needs and about new knowledge produced by research. But these actors see needs and solutions differently – they speak different languages. Regional or sectoral agencies, trade unions and non-governmental organisations act as catalysts for the necessary exchange of knowledge, while consultants and interest groups may facilitate action.





## Way to go

"Many of the key questions depend on your point of view, and events like this force everyone involved to recognise this fact," Karlsson says. There certainly seems to be a strong interest amongst project participants themselves in exploring these non-technical issues. Both Karlsson and Fernandez view this as a major step towards the creation of truly integrated innovation systems. "As the

German expression says, 'the road is the way'," Karlsson concludes. "There may still be some distance to go, but events like this show that we are travelling in the right direction."

(1) See 'Hard Issues - No Soft Option', edition 3/01.

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## SME Specific Measures

# SMEs reap rich rewards

The Fifth Research Framework Programme (FP5) includes special measures to help small and medium-sized enterprises (SMEs) prepare and carry out high-quality research projects of the kind normally accessible only to larger companies. More and more SMEs are benefiting.

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Use of the Exploratory Award and CRAFT schemes<sup>(1)</sup> by SMEs from around Europe continues to grow. Exploratory Awards fund up to 75% of the costs of preparing a substantive research bid. Latest figures show that 833 bids were made between January and April 2001, as many as in the whole of 1999.

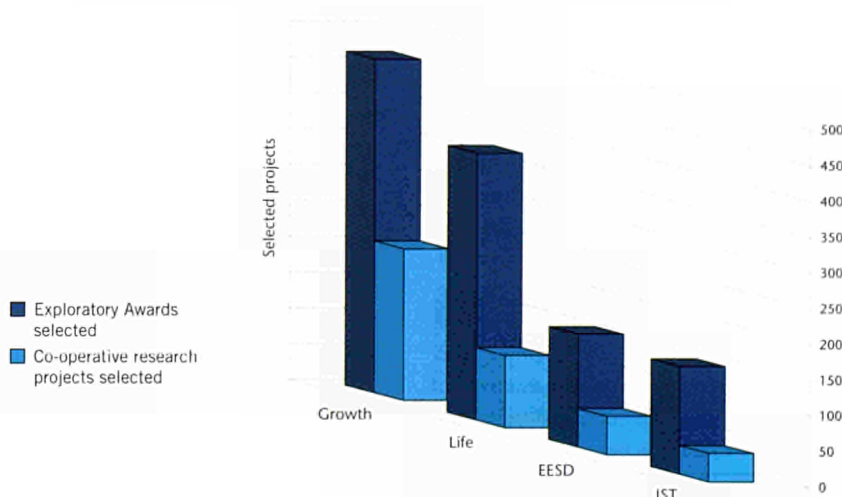
Proposals for CRAFT projects – in which consortia of SMEs lacking the in-house resources to carry out strategically necessary research projects jointly commission the work from a third-party 'research performer' – have risen even faster. Applications trebled from 148 in 1999 to 485 last year, and 439 have already come in during 2001, at a rate of 80 per month.

The Research and SMEs unit of the European Commission's Directorate-General for Research has also been gratified to see a steadily improving balance in the technological areas addressed by CRAFT projects. These have historically been concentrated in the fields of new products and industrial processes – part of FP5's 'Competitive and Sustainable Growth' programme. As the

chart shows, the Growth programme's share of CRAFT projects has fallen to only 52% in FP5, while its share of Exploratory Awards is just 41%.

(1) See 'Opportunities for SMEs', edition 3/99.

**Selected Exploratory Awards and co-operative research projects by FP5 specific programme, spring 1999 to spring 2001**







► CRAFT – Building Restoration

# The right research mix



Research into the optimal recipe for a repair mortar has done far more than improve the product. Detailed comparative analysis of all the available mixes is leading to increased competition and cheaper repair mortars, which will help Europe to preserve its architectural heritage.

Time has no respect for civilisation's great edifices. Wind and rain, physical damage and atmospheric pollution all wage war against our handiwork. Many historic monuments and buildings await restoration to their former glory.

Conventionally, damaged stonework is removed and replaced, but experts now also use repair mortars. These specially designed mixes enable restorers to repair damage while conserving as much of the original material as possible.

"There are three types of completely inorganic mortar," says Dr Eddy de Witte of Belgium's Royal Institute for Cultural Heritage (KIK-IRPA) in Brussels. "Lime-based mortars, popular in the United Kingdom, are good but difficult to apply. Cement mortars harden much faster and are easier to work with, but show signs of shrinkage. And there is a mysterious third type."

## Perfect recipe

De Witte's mystery mortar, based on zinc oxides and chlorides, was brought to the KIK-IRPA laboratories by Future Technology in Building Restoration (FTB), a small Belgian firm. Although the mortar was used widely in France and Belgium before the First World War, it practically disappeared until FTB rediscovered the formula and began to manufacture it again in 1995. It proved successful, but some restorers worried that it could not be used on types of stone commonly employed outside Belgium.

Could the recipe be improved to overcome these fears?

FTB and KIK-IRPA teamed up with two other small and medium-sized enterprises (SMEs), both restoration firms – Nouveaux Ateliers Méridol in France and Bauer-Bornemann in Germany. Together they launched an environment programme research project, using the CRAFT scheme<sup>(1)</sup>.

The outcomes of the recently completed collaboration have been remarkable. "Identifying the exact chemical reaction which takes place in the mortar enabled us to modify the formula," recalls de Witte. "Since then, I have not heard of another failure." FTB is currently assessing the possibility of patenting the results.

## Building competition

Zinc oxide mortars are still almost unknown outside France and Belgium. But KIK-IRPA studied all three types of mortar, both in the lab and by examining previous applications on buildings, and the results allow users to compare the different products objectively. This has helped to open up a new European market for the zinc oxide mortars. FTB is already introducing the product to the United Kingdom and Germany.

"FTB can now counter conservatism and hearsay with rigorous scientific research," explains de Witte. "The information we provided will increase competition in the market. And wider use of repair mortars will

make restoration quicker and cheaper, which will be good for European tourism."

Research was essential for commercialisation of FTB's product, but the SME would never have been able to carry this out itself. "SMEs struggle to work internationally," says FTB's Fillip Moens. "Through this project we have learnt about new markets – and through our partners have made direct contact with potential customers." ≡

*(1) ENV4980769 – Optimisation of mineral repair mortars for historic buildings, "Lithos Arte Mortars".*

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# IRE network news

FP6 Support for Regional Innovation

## Making connections

**If Europe's regions invest in strengthening their innovation systems they will reap the benefits of competitiveness and employment, says Javier Hernández-Ros. The Commission is committed to continuing its support as a catalyst for action, and as a platform for the exchange of good practice.**

"Technology parks, venture capital funds, graduate placement programmes, supply chain clusters, university-industry co-operation schemes – these and other types of innovation support are best delivered at regional level," says Hernández-Ros. He heads the Innovation Networks and Services unit of the European Commission's Directorate-General for Enterprise, which co-ordinates the Innovating Regions in Europe (IRE) network. "We are going to continue to try and bring as many regions as possible into the regional innovation scene."

### Playing catch-up

Innovation performance still varies very widely across Europe. Some regions have extremely strong innovation systems based on close links forged over many years between public authorities, enterprises, universities, research centres and investors. But in others, innovation is still low on the policy agenda. RITTS and RIS projects have helped over 100 regions to formulate innovation plans, many for the first time. The action has now been opened to the Newly Associated Countries of central and eastern Europe, where the first 15 of a new series of projects funded by the Innovation and SMEs programme are about to be launched. "It is crucial that we give newcomers help to develop and implement their own innovation strategies," says Hernández-Ros.

The Commission is also establishing a number of new Thematic Networks which will

bring together over 250 stakeholders across Europe for the focused exchange of regional innovation policy experience. "There is competition between regions for foreign investment and qualified staff. But often the best way to compete is to co-operate," Hernández-Ros asserts, summarising the philosophy of the IRE network. "Regional innovation policies must offer local companies the necessary gateways for co-operation with foreign partners, while regional authorities themselves can strengthen and accelerate their actions by learning from one another."

### European switchboard

In the Sixth Research Framework Programme 2002-2006 (FP6), the IRE network will continue to help all of Europe's regions to improve their innovation performance – not by funding their work directly, but by disseminating information and providing co-ordination and a platform for mutual learning and joint action.

"We will continue to act as a switchboard, connecting innovation policy-makers in different regions," says Hernández-Ros. And he points out that this role will assume even greater importance in FP6. "The planned co-ordination of national research programmes will give regions as well as Member States the opportunity to present joint programmes. The IRE network will be valuable as a forum for putting together joint actions."

### The IRE network in brief

As part of the Innovation and SMEs programme, the network of Innovating Regions in Europe (IRE) aims to facilitate the exchange of experience between regions developing regional innovation policies, strategies and schemes, and to improve their access to good practice. All such regions are welcome to participate, and over 100 European regions are already members. The network is currently being enlarged to include both new thematic networks and regions in central and eastern Europe, which will develop their own regional innovation strategies.

Further information is available at:

<http://www.innovating-regions.org/>

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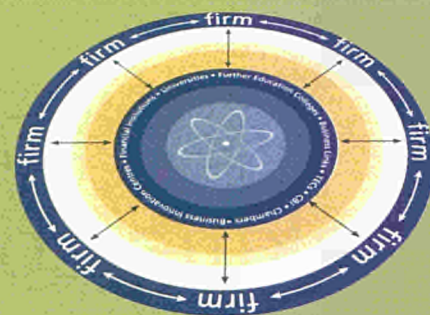
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► Innovative Actions

# Please mind the gap

The first round of bids for regional programmes of Innovative Actions for 2000-2006 closed in May. The successful regions, whose names will be announced in November, will spearhead a broadening and deepening of earlier Innovative Actions to further narrow the regional innovation gap.



Integrating firms and service providers (centre of diagram) in a series of linked networks satisfies the innovation support needs of business and ensures that the region's innovative capacity is fully exploited.

As a proportion of GDP, gross expenditure on research, technological development and innovation in Europe's 25 least-favoured regions (LFRs) is less than a quarter of the EU average – just one indicator of a serious inter-regional innovation gap. Public investment alone is not the answer, however. Because their innovation systems are smaller and less coherent, less-favoured regions struggle to absorb funds earmarked for innovation.

Through Innovative Actions<sup>(1)</sup> overseen by the Commission's Directorate-General for Regional Policy, LFRs have been experimenting with ways to square this circle. In 1993, the first Regional Technology Plans (RTPs) and Regional Innovation Strategy (RIS) projects were launched, joined soon afterwards by the Regional Information Society Initiatives (RISIs) and by the Innovation programme's Regional Innovation and Technology Transfer Strategy (RITTS) scheme.

## Networking

"Together, these actions have given practical proof that innovation flourishes where dense networks of co-operative relationships between public- and private-sector innovation actors are encouraged to grow in response to real business needs," says Mikel Landabaso from the Regional Policy DG. The policy agenda has been rearranged in the process, with the generation, exploitation and diffusion of knowledge replacing physical infrastructure as the central priority.

In their evaluation of RTPs, Technopolis and the University of Athens found, for example, a broadened spectrum of actors participating in regional economic planning<sup>(2)</sup>. The RTPs created "a policy planning culture where innovation and research and technological development are well embedded in the overall regional development strategies", says the report.

In the RIS process in the UK's West Midlands<sup>(3)</sup>, the power of networking became very clear. A regional survey found that "firms networked with other firms are up to six times more likely to innovate". As a result, existing networks were identified and teams of 'network brokers' set up to extend them and catalyse new ones to meet needs canvassed from local businesses.

## In with the new

The transition to the 2000-2006 period for Innovative Actions brings some important modifications. The strategic themes have been reduced from eight to three, which reflect some of the RTP, RIS, RITTS and RISI successes – information society, knowledge and technological innovation, as well as regional identity and sustainable development.

The earlier project-based approach gives way to a programming approach. Bids from regions that have been through the RIS/RITTS process – founders of the IRE Network – can incorporate actions they planned

in their RIS/RITTS process but were unable to implement, provided they are pilot experimental actions with a degree of risk attached.

But the prime objective remains the same. Regions will continue to use Innovative Actions as seed-beds for new ideas with the potential for rapid transfer to their mainstream Structural Funds programmes. ■

(1) See 'Speculate to Innovate', edition 4/01.

(2) 'The Evaluation of the Pre-Pilot Actions under Article 10: Innovative Measures Regarding Regional Technology Plans', Patries Boekholt, Erik Arnold (Technopolis) and Lena Tsipouri (University of Athens), June 1998, downloadable from <http://www.innovating-regions.org/download/RTPreport.doc>

(3) 'West Midlands Regional Innovation Strategy and Action Plan: Shaping our Future', downloadable from <http://www.innovating-regions.org/download/strategy.pdf>

## Contact

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<http://www.inforegio.org/innovating/>



► RITTS Case Study

# Traditional industries and new ideas

The RITTS project in Eastern Macedonia and Thrace revealed strong traditional industries but room for development in new technology sectors. Recommendations for priority actions are being fed into the region's operational programme.

The RITTS project in Eastern Macedonia and Thrace (EMTh) ran from 1998 to 2001. Its aim was to analyse the supply of, and demand for, technology in the region's industry, as the basis for the development of a regional innovation strategy.

The main EMTh industries are textiles and clothing, food processing and wine, paper pulp, furniture-making and tobacco. Manufacturing industries and services have a mainly domestic market. Over the last 30 years, substantial financial support from the European Union has created new industrial capacity, but mainly in traditional industries. Sectors such as telecommunications, software and electronics have made far less progress.

## What industry needs

According to Professor Nicos Komninos, consultant to the RITTS project, the aim was to discover how the region's industry saw its own shortcomings and support needs. A survey of 1,000 companies showed that only 9% had an export market, although 40% had introduced a new product in the last three years. Co-operation with universities was rare.

Technology audits of 45 companies revealed that over 80% had established goals – most commonly, increased productivity, improved product quality and new product development. But again, only 25% mentioned universities as a source of innovative ideas, although 60% expressed a wish for more links with universities and technology institutes. Over 60% planned significant improvement in production and control technologies, automation, management information systems, logistics, product design and e-commerce.

The RITTS process convened four sectoral workshops to examine:

- food, drink and tobacco
- clothing, textiles and shoes
- non-metallic ores, marble and construction materials
- packaging and plastics

From the workshops emerged a broad view of industry's needs – for a better transport and energy infrastructure, continued state subsidy of skilled labour, and improvement in training. Addressing fundamental problems appeared to be a higher priority than investment in innovation for longer-term development.

RITTS also identified gaps in the region's educational and research resources. Universities, technical training organisations and public-sector research institutes – whose funding is often 'precarious', according to the report – are not strong enough to meet local needs. Among technology transfer and industrial development organisations, only four have achieved a significant relationship with small and medium-sized enterprises.

## Shopping list

The RITTS project defined 26 actions which will be written into a regional operational programme designed to improve the climate for innovation. They fall under eight priority areas:

- encouraging establishment of clusters in new industries like telecommunications, electronics, and computer manufacture
- technological upgrading of existing industries
- strengthening the infrastructure for business services



Stainless steel vinification and storage tanks with an electronic temperature control system.

- strengthening technology transfer
- re-orienting the output of higher education
- funding for business innovation
- funding for spin-off companies
- monitoring and assessing innovation strategy

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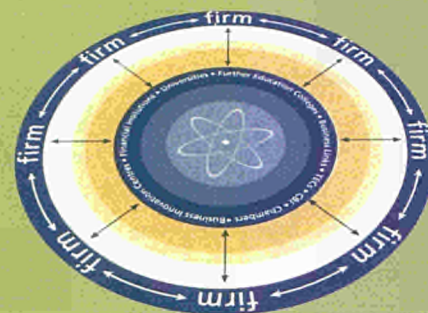




## Innovative Actions

# Please mind the gap

The first round of bids for regional programmes of Innovative Actions for 2000-2006 closed in May. The successful regions, whose names will be announced in November, will spearhead a broadening and deepening of earlier Innovative Actions to further narrow the regional innovation gap.



Integrating firms and service providers (centre of diagram) in a series of linked networks satisfies the innovation support needs of business and ensures that the region's innovative capacity is fully exploited.

As a proportion of GDP, gross expenditure on research, technological development and innovation in Europe's 25 least-favoured regions (LFRs) is less than a quarter of the EU average – just one indicator of a serious inter-regional innovation gap. Public investment alone is not the answer, however. Because their innovation systems are smaller and less coherent, less-favoured regions struggle to absorb funds earmarked for innovation.

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► RIS Case Study

# Yorkshire industry moving forward



The Electronics Yorkshire Centre of Excellence trained 300 unemployed people in its first year.

Over four years, the RIS project in Yorkshire and the Humber assessed the region's potential for innovation and business competitiveness, focusing on 15 key industrial sectors. Its conclusions form the basis for the continuing work of the new regional development agency.

The RIS project in Yorkshire and the Humber (Y&H), which ran from 1996 to 2000, encouraged industrialists to formulate the development strategies needed for their own sectors. At the outset, Y&H's productivity levels were lower than those of its competitors, and the region was over-dependent on traditional manufacturing. High-tech employment and private sector investment in R&D were among the UK's lowest. The RIS project focused on producing a plan to develop innovative capacity and to instil this into the region's permanent infrastructure.

## Key sectors

The RIS project was managed by the Y&H Regional Technology Network (RTN). It identified 15 sectors which were key to the regional economy, showed growth potential or needed some support for restructuring or diversification. "In each sector we identified a senior representative from one of the larger, more influential companies and asked them to put together a group of industrialists to define the issues and needs of the sector," says Tony Haynes, RTN's CEO.

Each group developed a range of initiatives addressing its own needs, including newsletters and seminars, technology transfer

measures, training, and venture capital schemes. Several, including those representing the chemical, electronics, food and textiles industries, developed centres of excellence or expertise as sectoral points of reference on technical or training problems. The Chemical Industry Regional Centre of Excellence (CIRCE) is a partnership between the RIS chemical sector and Hickson International, which matched the contribution of EU and UK grants to the costs. It provides a range of business incubation, training, laboratory and engineering facilities for small and start-up companies. The RIS finance sector has launched a number of support initiatives for specific sectors – the EMM fund for engineering and the Connect initiative to support new high-tech companies. Other schemes were developed for the design, environment, biosciences, medical equipment, printing and multimedia sectors.

## Informing the regional agency

Y&H's new regional development agency (RDA), Yorkshire Forward, has taken up the measures inspired by the RIS project. "We found the RIS recommendations an invaluable starting point," says the RDA's Reza

Zadeh. "Its concept of clusters of key industries and the companies serving them – digital industries, advanced engineering and metals, chemicals, food and drink, and biosciences – has been crucial."

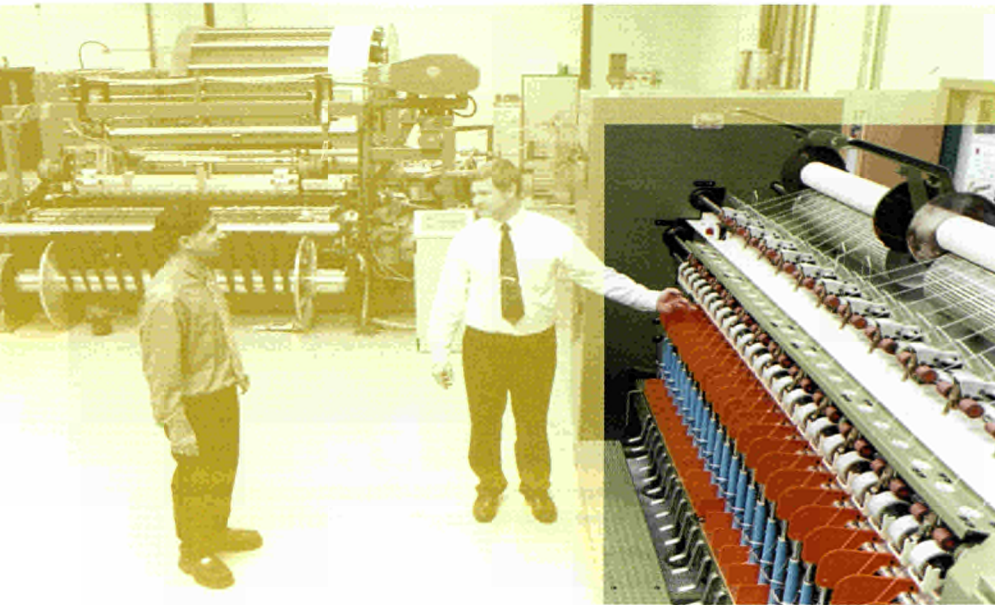
The food and drink cluster, for example, includes supply of ingredients, manufacture, specialist transport, wholesale and retail, as well as the logistics, finance, other supporting infrastructure and research institutions for innovation. Within each cluster, business support is enabled by an RDA team including specialists in inward investment, the supply chain, skills and training, land and property. The RDA is currently 'mapping' each cluster – identifying gaps in the supply chain such as shortages of key skills, and benchmarking against performance in other regions.

## Contacts

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<http://www.yorkshire-forward.com/>





Wool and worsted have always been important to Yorkshire. The region employs 40,000 in the textiles industry and 170,000 in its supply chain.

## Trans-Regional Innovation Project

# Across northern borders

**Europe's northern fringes are not peripheral to its competitive ambitions. Building on the high-technology potential of the near-arctic regions of Finland and Sweden, the TRIP Northern EU project has created a framework for collaboration and development throughout the region.**

The most northerly regions of Finland and Sweden are nearer to each other than to the south of their own countries, so cross-border initiatives make good sense. The regions are largely rural, with scientific and technical resources concentrated in the major cities. Their technology specialisms include electronics and IT, software, space technology, health care and medicine, biotechnology and the environment. The Northern EU Trans-Regional Innovation Project (TRIP) was set up to see how these resources could be better exploited through cross-border collaboration.

Northern EU built on the findings of a Regional Innovation Strategy (RIS) project

that ran from 1997 to 1999. The RIS study recommended that the technical centres in northern Finland and Sweden should form the basis of a network of services and cross-border projects. The TRIP project, completed in April 2001, employed analytical and market studies, seminars and the spread of information to focus on this objective.

"The idea was to create a network in northern Finland and northern Sweden linking universities, research centres and businesses active in the high-tech field. We wanted it to be as complete as possible," explains Paulina Pikkujäämsä of Technopolis in Oulu, Finland, which jointly managed the project with Aurorum Science Park of Luleå,

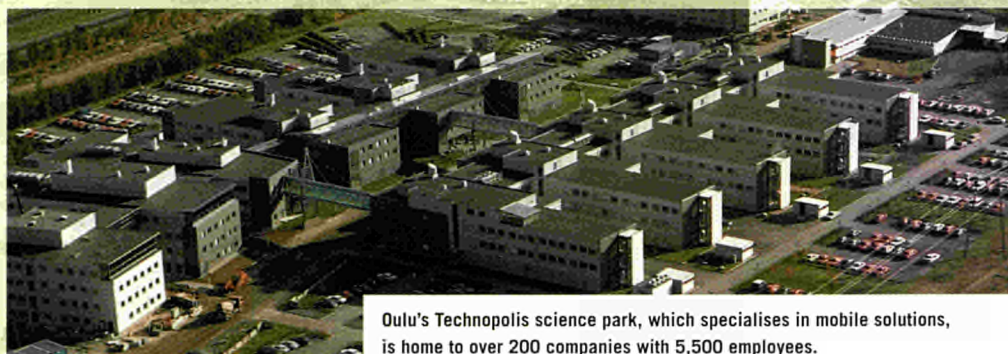
Sweden. "The technology centre network has 13 members in Finland and eight in Sweden, and we called it Multipolis." Each centre has a name that describes its specialism – Hydropowerpolis in Sweden and Micropolis in Finland, for example.

## Regional analysis

A key part of the TRIP process was to analyse the region's capabilities through surveys of its companies and research centres. Fifty high-tech companies were asked about their needs and innovation resources. The regional strengths mentioned most often were local clusters of excellence, a good R&D environment and a loyal workforce.

>>>





Oulu's Technopolis science park, which specialises in mobile solutions, is home to over 200 companies with 5,500 employees.

Conversely, lack of skilled workers was felt to be a problem, as were the distance to markets and consequent high transport costs. Most companies in the survey, carried out in 1999, wanted to increase cross-border co-operation significantly, but felt hindered by language problems and lack of information about markets and resources. They welcomed co-operation with universities and research centres.

The survey of Multipolis' technology centres gathered not just opinions but details of their skills and facilities. It found that local universities and educational institutes were crucial to the success of the technology centres. Most centres also said that they relied on local expertise and the growth potential of electronics and IT to attack niche markets. Fact sheets on each technology centre were published in two technical reports, one covering Finland and one Sweden. This information is also presented in a new website (see Contact) which contains basic data about the whole TRIP area.

A cross-border analysis of strengths, weaknesses, opportunities and threats found that the major technical centres of Oulu and Luleå were strong clusters with a local radiation effect. EU membership, and the strengthening of cross-border ties through the Multipolis network, were key opportunities. Threats

were seen in regional disadvantages such as the worsening economic status of municipalities, and in the failure of local companies to enter international markets. Weaknesses were similar to those identified by the business survey.

### Now Norway, too

"TRIP has really promoted co-operation between the research and business sectors," says Pikkujämsä. "We arranged six major cross-border seminars and many more smaller meetings and workshops to help the centres formulate and implement development strategies, and these have resulted in about a dozen concrete development projects. We also arranged more than 40 contacts between research-oriented businesses, and helped them with partner search, marketing and subcontracting, as well as finding them contacts within research centres. For example, we helped to create an electronics subcontracting network of 20 small and medium-sized IT companies to supply the region's major electronics manufacturers, such as Nokia networks."

To prepare for further expansion of the Northern EU network, TRIP also compared Oulu and Luleå with Trondheim in northern Norway. It looked at the high-tech industries of e-content, e-learning and

wireless and medical technology to discover potential areas of co-operation. Trondheim's research base was found to be very strong and the analysis identified many opportunities for joint initiatives by the three regions. "The TRIP project has also served as a benchmarking exercise, providing a model for such international co-operation," concludes Pikkujämsä. "We are now looking at similar collaboration with Ireland, Wales and Italy."



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## Urban Innovation Strategies

# Innovative cities learn from each other

**Innovation relies on the creative ideas of researchers and entrepreneurs. But to promote innovation in their areas, regional administrations also need ideas. Exchanges of experience with other similar regions can make a valuable contribution to the development of a successful innovation strategy.**

Metropolis – the European Forum on Innovation Strategies in Metropolitan Regions – was launched in 1999 and builds on the experience of the network of Innovating Regions in Europe (IRE). It aims to help metropolitan regions identify best practice in promoting innovation through the exchange of information with other regions, and to use this to carry out new or improved actions within their regional innovation policies. "Drawing on the previous experience of other regions can really help regional administrations to improve their local innovation support mechanisms," says Eduardo Diaz of Socintec, the consulting firm which co-ordinates Metropolis.

The IRE network offers a platform for ongoing learning between regions which have carried out RITTS/RIS innovation strategy development exercises. Metropolis has used this forum to bring together eight European metropolitan areas – Madrid, Lyon, Helsinki, Lisbon, Lazio, Baden-Württemberg, Bilbao and Scotland. All wanted to share the results of their new innovation policies.

The next phase of the project, due to start later this year, will see an anticipated 13 regions continue a dialogue and undertake pilot actions. This new phase will also be open to metropolitan regions from the new accession countries.

## Sharing experiences

The initial exchange of views took place at four seminars held in Madrid, Helsinki, Lisbon and Lyon, which drew attention to four key issues:

- exploitation of regional science and technology supply

- the impact of logistics, transport and distribution on innovation efficiency
- stimulation and support of new technology-based firms
- innovation in the global metropolitan strategy

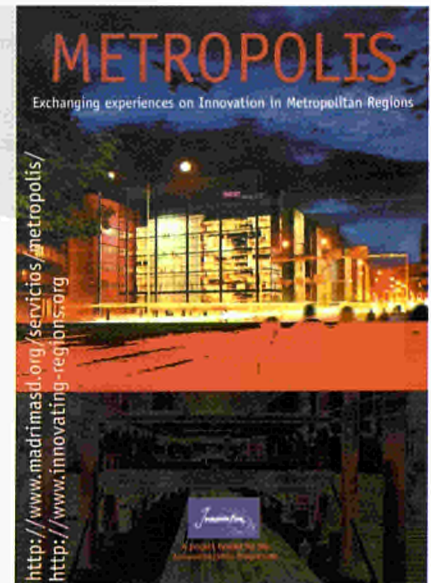
For example, the Community of Madrid presented its Madri+d project which facilitates the transfer of know-how to companies, drawing on the large scientific and technological research community in the region. Similarly, the Lyon Chamber of Commerce described its Crealys project, a model case of the incubator concept, featuring individual coaching of start-ups.

## Work in progress

One of the challenges ahead is ensuring the commitment of regions to implementing Metropolis pilot actions within their innovation policies. "One of the main tasks of the co-ordinator is to find common interests between the regions which may have very different individual objectives," says Diaz.

Future activities will include four new work groups. Likely topics for discussion include telework, and co-operation between small and large companies. "The regions will decide on pilot actions, but may draw on themes discussed in the work groups," says Diaz. "We would expect the work groups to lead to pilot actions, such as several urban regions building telework promotion mechanisms using information and communication technologies."

Project newsletters and press releases will also be provided through an internet forum. ≡



The Metropolis newsletter, which is available on the project's website (see Contact).

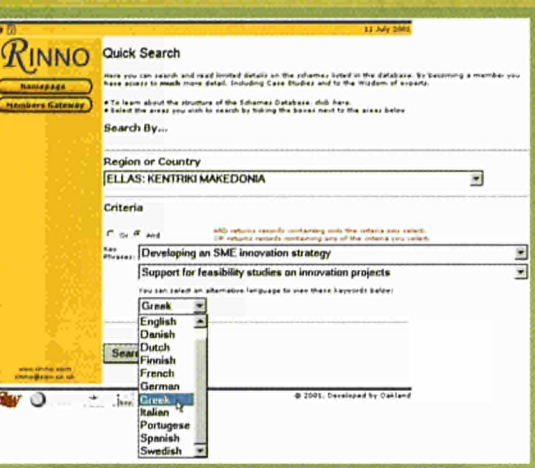
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# Regional wisdom on the web



A new on-line service is designed as the central resource for information on good practice in regional innovation. More than just a database or a website, Rinno provides a virtual space where regional policy-makers can learn from others with the most relevant experience.

The Rinno project began in January 2000, funded jointly by the Directorates-General for Enterprise and Regional Policy, with additional support from Research DG. Three distinct 'levels' of documentation are offered:

- information about the regional innovation schemes in individual Member States
- selected case studies demonstrating good practice in different types of regional innovation
- a practical self-help guide to implementing innovation policy – this will mainly be presented as a library organised into a number of themes

The aim is to help regional policy-makers to improve existing schemes, to design new ones, and to market their own schemes throughout Europe. "This treasure chest of regional experience, easily accessible in one place, will be a valuable policy-making tool," says Javier Hernández-Ros of Enterprise DG.

## Overwhelming demand

Many new regions are being drawn to the new Innovative Actions which build on the work of earlier Regional Innovation Strategies (RIS) and Regional Innovation and Technology Transfer Strategies (RITTS) projects<sup>(1)</sup>. "The response has been overwhelming," says Mikel Landabaso of Regional Policy DG. "So much interest was stimulated by the 100 or more RIS/RITTS

projects. Policy-makers recognise the value these innovation schemes can bring to their own regions. Rinno arose precisely from our experience running RIS/RITTS. It will help them to identify the best means of promoting innovation and how best to invest funds – which in new policy areas is no easy task."

Rinno's structure is similar to that of the equivalent database for national innovation policy-makers, the Trend Chart on Innovation in Europe<sup>(2)</sup>. The Trend Chart itself may also be of interest to regional policy-makers, since some synergy and interplay exists between measures at national and regional levels. "The Trend Chart can also be useful as an orientation framework for the regions, furnishing new ideas and possible contacts, as well as providing a wider picture of innovation policy," explains Landabaso.

## Latest developments

Rinno is continually evolving – several case studies, explained in depth as examples of good practice, have recently been added to the database. A series of peer review sessions regarding Rinno are currently under way with innovation policy experts from all Member States – the first took place in Brussels on 7 June. The experts are analysing the data in order to suggest other examples of good practice, or to indicate gaps in the current information.

A 'good practice guide' based on the results of the project is to be released in October. This guide is intended for use alongside the website and database, in an integrated package. It will include a CD-ROM containing selected information from the database and facilitating navigation through the website.

"Experience in less-favoured regions can be much more relevant to a regional policy-maker than that in technologically very advanced regions," says Landabaso. "Rinno draws this all together, giving much wider coverage and a deeper understanding of how the innovation policies are designed." ■

(1) See this edition, page 20.

(2) See this edition's dossier article, starting on page 6.

### Contacts

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## Young entrepreneurs and SMEs – first virtual world congress

September 2001 – March 2002

Organised by the European Commission, together with The Spanish Kingdom, the Government of Aragón and the Young Entrepreneur Association of Zaragoza, the congress will create a forum for the exchange of ideas and experiences on the problems of young entrepreneurs and SMEs. It is intended to maximise commercial exchange between participants, diffuse new information technologies, promote an entrepreneurial culture and disseminate good business practices. Themes will include e-business, new business models, globalisation, human resources, the environment, and society and enterprise.

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## Health technology brokerage event

5 October, Reykjavik (Iceland)

This brokerage event will bring together companies and researchers in the field of health technology, creating a unique opportunity to establish contacts for future collaboration, and to explore development and innovation in the field of health technology in Iceland. There will be a full day of pre-arranged meetings between potential collaborators.

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## Science-based patenting and licensing

11-12 October, Barcelona (Spain)

This hands-on course is organised by the Association of European Science and Technology Transfer Professionals (ASTP). Plenary and parallel sessions led by experienced speakers from Europe and the United States will highlight recent developments and everyday problems in university-industry patenting and licensing.

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secretary@astp.net  
<http://www.sciencealliance.nl/english/barcelona2001.htm>

## Unity and diversity: the contribution of the social sciences and the humanities to the European Research Area

29-30 October, Bruges (Belgium)

Organised by the Belgian EU Presidency and the European Commission's Directorate-General for Research, this event will look at the potential contribution of the social sciences to the strategic goals of promoting new forms of European governance, stabilising Europe through enlargement and co-operation, implementing a new economic and social agenda, and improving the quality of life of the individual citizen.

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## Micro- and nanotechnologies and applications

15-16 November, Thessaloniki (Greece)

This international brokerage event forms part of the Minitech project on assistance for small and medium-sized enterprises (SMEs) in the micro- and nanotechnology industry. Organised by IRC Help-Forward, the event will enable participating organisations to establish cross-border contacts with some of the major actors in the field. The aim is to foster transnational technological co-operation and joint participation in EU research projects. A parallel event will be dedicated to 'The micro- and nanotechnology research of the future and the exploitation of its results'.

### Contact

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Tl. +30 31 552 791  
Fx. +30 31 552 790  
dimosthenis@help-forward.gr  
<http://www.help-forward.gr/>

## TRAIN-IT courses

18-24 November

TRAIN-IT teaches European entrepreneurs in the field of Information Society Technologies (IST) how to write a business plan which will win support from investors.

In addition to the November session, four other dates have been added to the programme, which is funded by the Fifth Framework Programme's IST programme:

- 9-15 June 2002
- 21-27 July 2002
- 15-21 September 2002
- 17-23 November 2002

### Contact

H. Bechmann  
Tl. +49 4821 778520  
Fx. +49 4821 778500  
bechmann@izet.de  
<http://www.train-it.org/>

## Biotechnology networking conference

30 November, Padova (Italy)

This technology transfer day, organised by the IRC Irene as part of the biennial Bi-nova conference, will disseminate technology offers and requests coming from the Italian and European Innovation Relay Centre network.

### Contact

I. Boesso, IRC IRENE  
Tl. +39 041 509 3023  
Fx. +39 041 509 3078  
irene@venetinnova.it  
<http://www.venetinnova.it/>

## IST 2001 – 'Technologies serving people'

3-5 December, Düsseldorf (Germany)

This year's Information Society Technologies event will showcase IST exhibits, as well as providing a forum for debate on the central themes of the impact of information technologies. There will also be discussions concerning the place of the IST programme within the European Union's Sixth Research Framework Programme.

Erkki Liikanen, European Commissioner for Enterprise and Information Society, will give a number of speeches relating to the issues discussed. IST 2001 is being organised in collaboration with the ministry of economy, SMEs, energy and transport of the German state of North Rhine-Westphalia.

### Contact

[http://europa.eu.int/information\\_society/newsroom/istevent/index\\_en.htm](http://europa.eu.int/information_society/newsroom/istevent/index_en.htm)





## Assessment of the Regional Innovation and Technology Transfer Strategies and Infrastructures (RITTS) scheme

NB-NA-17-028-EN-C,  
ISBN 92-894-0629-1, €17.50

The pace and mechanisms of economic development vary widely across the EU and within Member States. As a result, there is wide consensus that innovation policy should be framed at the regional level – not only to take account of local economic circumstances, but also to be closer to SMEs, which are regarded as the primary engines of innovation and growth, and therefore as key 'clients' of the economic development process.

This publication documents the implementation, evolution and evaluation of the RITTS scheme, summarising its achievements and explaining both 'successes' and 'failures'. The final chapter adopts a theoretical perspective to suggest how the scheme might be extended in the future.

## Corporate venturing in Europe

NB-NA-17-029-EN-C,  
ISBN 92-894-0630-5, €16

Corporate venture capitalism (CVC) is important as a source of support for high-technology start-up companies and as a means of opening large corporations to change. It is defined as a larger company taking a direct minority stake in a smaller one for strategic or financial reasons. It tends to be driven by technological change, and can be described as 'the targeted use of capital to support external technological development'. The level of CVC activity varies cyclically.

This supply-side study, the first to be conducted on a pan-European basis, comprised desk research, 25 personal interviews with known corporate venturers, and a postal questionnaire to 2,118 of the largest companies in Europe. Lessons are drawn from recent case studies and applied in suggestions for public policy.

## Biotechnology programme (1994-98) project reports, vol. 2

KI-NA-19405-EN-C,  
ISBN 92-894-0240-7, €17.50

The Biotech 2 programme, with a budget of almost €600 million, ran from 1994 to 1998. This publication provides summaries of 150 projects funded following the second call for proposals, which targeted research areas such as microbial cell factories, animal models of disease, cell to cell communication and structure-function relationships.

## FAIR: Co-operative research for SMEs

ISBN 92-828-9770-2, €48

The European Commission has published the project synopses of a number of co-operative research projects undertaken on behalf of transnational groups of small and medium-sized enterprises (SMEs). These projects, in the fields of agriculture, agro-industry and fisheries, were funded under the FAIR programme of the Fourth Research Framework Programme. The publication provides synopses of 61 projects, as well as statistics on the distribution of project participants around Europe.

## Note

Publications are free unless otherwise stated. If specific contact information for obtaining a publication is not supplied, and there is a price listed in euros, then the publication can be purchased from the sales and subscription office in your country of the Office for Official Publications of the European Communities (EUR-OP). Addresses can be found in most EU publications, on the WWW (<http://eur-op.eu.int/general/en/s-ad.htm>) and by contacting EUR-OP (fax: +352 2929 42759).

## Helping businesses start up – a 'good practice guide' for business support organisations

CT-25-99-980-XX-C (11 EU languages),  
ISBN 92-828-9316-2

Starting a business involves risks, but these can be reduced by appropriate support and assistance. This booklet presents the results of an EU programme of discussions on business support measures between the Member States. It identifies 20 examples of good practice in helping start-ups with training, information and finance, and of direct support in the form of incubators. A short description and references to sources of further information are provided for each good practice.

### Contact

[http://europa.eu.int/comm/enterprise/entrepreneurship/support\\_measures/start-ups/helping.htm](http://europa.eu.int/comm/enterprise/entrepreneurship/support_measures/start-ups/helping.htm)

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